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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,995	01/14/2002	Jong Sik Paek	W2K1085	6353

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EXAMINER

KANG, DONGHEE

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,995

Applicant(s)

PAEK, JONG SIK

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 14, 15, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 2 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Remarks

1. Claim **8** is withdrawn from further consideration because the elected species (Figs. 1-2) does not read the claim 8.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. Acknowledgment is made of receipt of applicant's Information Disclosure Statement (PTO-1449) filed January 14, 2002.

Election/Restrictions

4. Applicant's election with traverse of embodiment 1 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the Figures are interrelated to another and should be prosecuted as part of the same application. This is not found persuasive because 35 U.S.C. 121 quoted in the preceding section states that the Commissioner may require restriction if two or more "independent and distinct" inventions are claimed in one application. In 37 CFR 1.141, the statement is made that two or more "independent and distinct inventions" may not be claimed in one application. If it can be shown that the two or more inventions are in fact independent, applicant should be required to restrict the claims presented to but one of such

independent inventions. 35 U.S.C. 121 provides that restriction may be required to one of two or more independent and distinct inventions.

The general principles relating to distinctness or independence may be summarized as follows:

(A) Where inventions are independent (i.e., no disclosed relation therebetween), restriction to one thereof is ordinarily proper, MPEP § 806.04 - § 806.04(i), though a reasonable number of species may be claimed when there is an allowed (novel and unobvious) claim generic thereto. 37 CFR 1.141, MPEP § 809.02 - § 809.02(e).

(B) **Where inventions are related as disclosed but are distinct as claimed, restriction may be proper.** Embodiments 1-10 are related but are distinct.

Therefore, the requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims **4, 14 & 18** are rejected under 35 U.S.C. 102(e) as being anticipated by Glenn et al. (US 6,342,406).

Regarding claim **4**, Glenn et al. teach a semiconductor package comprising (Fig.2):

a semiconductor die (102) having a substantially planar light receiving surface for receiving light from outside of the package and having a plurality of electrical contacts (106); a plurality of terminals (122) for connecting signals from the semiconductor die to an external device; a glass (110: Col.4, lines 4-5) for permitting light to enter the semiconductor package (Col.3, lines 37-38) and pass to the light receiving surface of the semiconductor die, the glass including means (114, 118 & 116) for connecting the plurality of electrical contacts to the terminals. See also Col.3, line 16 - Col.6, line 62.

Regarding claim **14**, Glenn et al. teach a semiconductor package comprising (Fig.2):

a semiconductor die (102) having means (104) for receiving light from outside of the package, and a substantially planar surface opposite of the means, wherein a plurality of bond pads (106) are disposed on the periphery of the means; a plurality of conductive bumps (112) coupled to the bond pads; and a glass (110: Col.4, lines 4-5) having a substantially planar first surface (110E) and a substantially planar second surface (110I), wherein a plurality of electrically conductive patterns (114) are formed near the circumference of the second surface, each of the conductive patterns having a first contact in electrical contact with an associated one of the conductive bumps. See also Col.3, line 16 - Col.6, line 62.

Regarding claim **18**, Glenn et al. teach a semiconductor package comprising (Fig.2):

a semiconductor die (102) having means (104) for receiving light from outside of the package, and a substantially of planar surface opposite of the means and having a plurality of electrical contacts (106); means (122) for connecting signals from the semiconductor die to an external device; and a glass (110: Col.4, lines 4-5) for permitting light to enter the semiconductor package and pass to the means for receiving light (Col.3, lines 37-38), the glass including means (114, 118 & 116) for connecting the plurality of electrical contacts to the means for connecting signals. See also Col.3, line 16 - Col.6, line 62.

7. Claims **1, 3, 14-15 & 17** are rejected under 35 U.S.C. 102(e) as being anticipated by Kelly et al. (US 6,396,116).

Regarding claim **1**, Kelly et al. teach a semiconductor package comprising (Fig.7):

a semiconductor die (706) having a substantially planar light receiving surface for receiving light from outside of the package, and a substantially planar opposing surface, wherein a plurality of bond pads (410, Fig.4a: Col.6, line 65-Col.7, line 3) are disposed on the periphery of the light receiving surface; a plurality of conductive bumps (736) fused to the bond pads; a glass (712) having a substantially planar first surface, wherein a plurality of the electrically conductive patterns (750) are formed near the circumference of the second surface; and a plurality of conductive balls (736) having a diameter greater than a height of the semiconductor die, wherein the conductive balls

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are each fused to a second contact (750) of an associated one of the electrically conductive patterns.

Kelly et al. do not expressly show in Fig.7 the metal patterning (750) having a first contact in electrical contact with an associated one of the conductive bumps (726). However, Kelly et al. note that the metal patterning provides a portion of the electrical connection between the optical sensor and the circuit board (730) and carries electrical signals from the first substrate (706) to the circuit board (Col.7, lines 3-8).

Therefore, it is clear that the metal patterning has a first contact in electrical contact with an associated one of the conductive bumps to carry the electrical signals from the first substrate to the circuit board.

Regarding claims **3 & 17**, Kelly et al. do not teach the conductive patterns. Glenn et al. teach the conductive pattern comprising a conductive layer disposed on the glass. Glenn et al. do not teach the conductive patterns are patterns etched from a conductive layer disposed on the glass. However, this is a product-by-process limitation. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process". In re Thorpe, 777F. 2d 695,698 USPQ 964, 966 (Fed. Cir.1985). See also MPEP 2113. Moreover, an old or obvious product produced by a

new method is not a patentable product, whether claim in "product by process" claim or not.

Regarding claim **14**, Kelly et al. teach a semiconductor package comprising (Fig.7):

a semiconductor die (706) having means for receiving light from outside of the package, and a substantially planar surface opposite of the means, wherein a plurality of bond pads (410, Fig.4a: Col.6, line 65-Col.7, line 3) are disposed on the periphery of the means; a plurality of conductive bumps (726) coupled to the bond pads; and a glass (712) having a substantially planar first surface and a substantially planar second surface, wherein a plurality of the electrically conductive patterns (750) are formed near the circumference of the second surface.

Kelly et al. do not expressly show in Fig.7 the metal patterning (750) having a first contact in electrical contact with an associated one of the conductive bumps (726). However, Kelly et al. note that the metal patterning provides a portion of the electrical connection between the optical sensor and the circuit board (730) and carries electrical signals from the first substrate (706) to the circuit board (Col.7, lines 3-8).

Therefore, it is clear that the metal patterning has a first contact in electrical contact with an associated one of the conductive bumps to carry the electrical signals from the first substrate to the circuit board.

Regarding claim **15**, Kelly et al. as modified by Glenn et al. teach the semiconductor package further comprising a plurality of conductive balls (736) having a diameter greater than a height of the semiconductor die, wherein the conductive balls

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are each fused to a second contact (750) of an associated one of the electrically conductive patterns.

Allowable Subject Matter

8. Claims **2 & 16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Although Kelly et al. and Glenn et al. teach the conductive patterns formed on the glass, Kelly et al. and Glenn et al., taken along or in combination, do not teach or render obvious that the glass includes channels and the conductive patterns being formed in the channel. The present claimed invention provides a thin and small semiconductor package.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Donghee Kang
Examiner
Art Unit 2811

dhk
April 19, 2003